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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/768,153	01/24/2001	Emmanuel Desurvire	Q62793	3628

7590 09/12/2003

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EXAMINER

CURS, NATHAN M

ART UNIT	PAPER NUMBER
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2633

DATE MAILED: 09/12/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/768,153

Applicant(s)

DESURVIRE, EMMANUEL

Examiner

Nathan Curs

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-11 is/are rejected.
- 7) ☒ Claim(s) 5 and 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, remote control of the reference voltage, from claim 7 (page 14, line 2), must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the

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specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Regarding claim 7, the claim states "the reference voltage is remote controlled"; however, the specification does not described how remote control is achieved.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Cao (US Patent No. 6337755).

Regarding claim 1, Cao discloses a regenerator for a wavelength division multiplex transmission system (abstract and Fig. 1, element 10), including a demultiplexer adapted to separate the signals of various channels (Figure 1, element 12), a plurality of optical modulators each adapted to receive signals from the demultiplexer (Figure 1, elements 20) and a modulation clock from a clock distribution unit (col. 4, lines 26-35 and col. 6, line 58 to col. 7, line 3), and a multiplexer adapted to combine the signals modulated by said modulators (Figure 1, element 30), in which regenerator the clock distribution unit includes a reference clock (col. 4, lines 12-16) and, for each modulator, means for synchronizing the phase of a copy of the reference clock with the signals applied to the modulator (col. 4, lines 16-20).

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Regarding claim 11, Cao discloses a wavelength division multiplex transmission system including a regenerator (col. 2, lines 21-25) according to claim 1 (Figure 1, element 12, 20, and 30; col. 4, lines 26-35; col. 6, line 58 to col. 7, line 3; and col. 4, lines 12-20).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cao (US Patent No. 6337755) in view of Ransijn (US Patent No. 6347128).

Regarding claim 2, Cao discloses a phase synchronization means, including a clock recovery circuit, for each modulator (col. 4, lines 16-20), but does not disclose that the means includes a phase-locked loop. Ransijn discloses a clock recovery circuit that includes a phase-locked loop (col. 5, lines 36-51). It would have been obvious to an artisan at the time of the invention to include a phase-locked loop in the clock recovery circuit of the phase synchronization means of Cao, as taught by Ransijn, in order to properly recover the clock signal.

Regarding claim 8, Cao discloses a reference clock supplied by a clock recovery circuit (col. 4, lines 12-16), but does not disclose a voltage-controlled oscillator. Ransijn discloses a clock recovery circuit that has a clock output supplied by a voltage-controlled oscillator (Figure 6, element 26). It would have been obvious to an artisan at the time of the invention to use a

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voltage-controlled oscillator with the clock recovery circuit of Cao, as taught by Ransijn, in order to produce a reference clock based on the recovered clock signal.

Regarding claim 9, Cao discloses a clock recovery circuit receiving the signal that is applied to the regenerator (Figure 1, elements 11, 12, 21, 22, and 24), but does not disclose a voltage-controlled oscillator controlled in accordance with the signals applied to the regenerator. Ransijn discloses a clock recovery circuit and a voltage-controlled oscillator controlled in accordance with the signals input to the clock recovery circuit (Figure 6, element "Data in" and col. 5, lines 36-51). It would have been obvious to an artisan at the time of the invention to control the voltage-controlled oscillator of the clock recovery circuit in accordance with the signal applied to the regenerator, as taught by Ransijn, so that the modulation, based on the reference clock output, supplied by the voltage-controlled oscillator, would properly modulate the signal applied to the regenerator.

Regarding claim 10, Cao discloses a coupler for sampling a portion of the input signals of the regenerator (Figure 1, element 16) and a clock recovery circuit adapted to receive signals sampled by the coupler (Figure 1, element 24). Cao does not disclose a clock recovery circuit that supplies a control signal for the oscillator. Ransijn discloses a clock recovery circuit that supplies a control signal for the oscillator (Figure 6, element PD(t) and col. 5, lines 36-51). It would have been obvious to an artisan at the time of the invention to have the clock recovery circuit supply the voltage-controlled oscillator with a control signal, so that the signal produced by the voltage-controlled oscillator would produce an output signal in accordance with the recovered clock signal.

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9. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cao (US Patent No. 6337755) in view of Ransijn (US Patent No. 6347128) as applied to claims 2 and 8-10 above, and further in view of Bigo (US Patent No. 6323979).

Regarding claim 3, Cao in view of Ransijn discloses a phase-locked loop that includes a phase shifter, controlled by a signal generator (Ransijn, Figure 6, element 34), receiving a copy of the reference clock (Ransijn, Figure 6, elements 26, Φ and 32) and supplying a modulation clock (Ransijn, Figure 6, element $\alpha(t)$ and col. 6, lines 3-11). Cao in view of Ransijn does not disclose a phase shifter controlled in accordance with the average power of the output signal of the modulator. Bigo discloses an optical regenerator with a phase shifter controlled in accordance with the average power of the output signal of the modulator (Figure 1, element 10, and col. 4, lines 23-33). It would have been obvious to an artisan at the time of the invention to substitute the signal generator based control of the phase shifter, as disclosed by Cao in view of Ransijn, with the control of the phase shifter as disclosed by Bigo, since the average power control signal of Bigo increases with the increasing closeness of the phase between the signal applied to the regenerator and the modulation clock, providing a measure of the effectiveness of the modulation, and thus controlling the phase shifter based on this measure.

Regarding claim 4, Cao in view of Ransijn discloses a phase-locked loop, but does not disclose that the phase-locked loop includes a coupler adapted to sample a portion of the output signal of the modulator and a photodiode adapted to receive the signal from the coupler and to supply a voltage representative of the average power of the output signal of the modulator. Bigo discloses an optical regenerator with a coupler adapted to sample a portion of the output signal of the modulator (Figure 1, element 2) and a photodiode adapted to receive the signal from the coupler (Figure 1, element 9) and to supply a voltage representative of the average power of the output signal of the modulator (col. 4, lines 23-33). It would have been obvious to

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an artisan at the time of the invention, in the embodiment of the phase shifter control circuit, to sample a portion of the output signal of the modulator and use a photodiode to obtain the average power of the signal, as disclosed by Bigo, as this average power signal increases with the increasing closeness of the phase between the signal applied to the regenerator and the modulation clock, providing a measure of the effectiveness of the modulation, and thus controlling the phase shifter based on this measure.

Allowable Subject Matter

10. Claims 5 and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure

- US Patent No. 6337886 – Note an optical regenerator where the clock signal used for regeneration is based on a phase-locked loop having a voltage-controlled oscillator and a phase comparator, as well as low pass filter for extracting the average value of the phase comparator signal and an amplifier configured as a comparator between the signal from the low pass filter and a reference voltage, the amplifier output controlling the voltage-controlled oscillator (col. 6, lines 13-47, col. 7, lines 16-32 and lines 38-44).

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12. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (703) 305-0370. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (703) 305-4729. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.



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